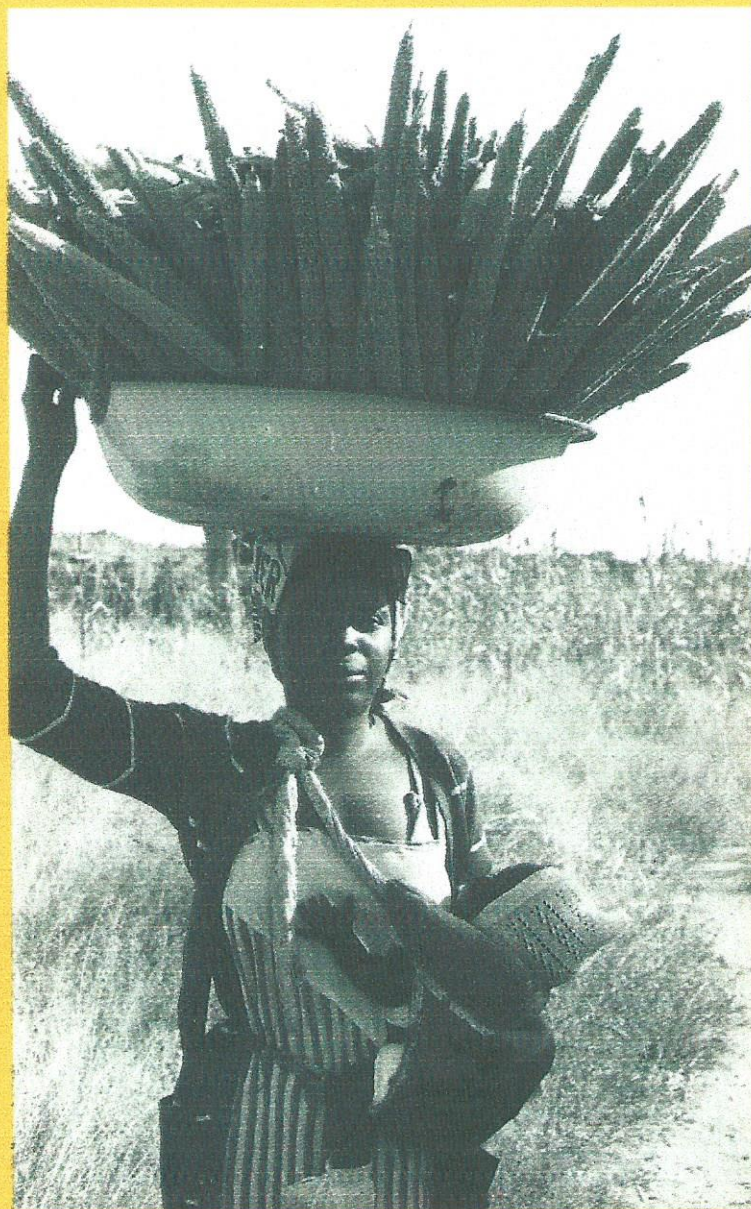


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Collecting wild yams in West Africa: Benin, Cameroon and Côte d'Ivoire

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Introduction

Several species of wild yam can be found in Africa, especially in West Africa. Some of these are edible while others are very poisonous. The different types of yam and their many properties are well known to local people.

The *Dioscorea* species have been described taxonomically by Chevalier (1936), de Wildeman (1938), Burkill (1940), Jacques-Felix (1947), Miège (1952, 1958, 1968) and Dumont *et al.* (in preparation). Among these, some are said to have contributed to the origins of the complex type cultivated in West Africa, *Dioscorea cayenensis-rotundata*. These are *D. mangelotiana*, *D. burkilliana*, *D. praehensilis* and *D. abyssinica* (Dumont, 1982; Hamon, 1987). The first two species thrive in dense forests. *D. praehensilis* is a mesophile forest species while *D. abyssinica* grows exclusively in the savannah areas.

Dioscorea cayenensis-rotundata provides a major portion of the food produced in Africa, and much more ought to be known about the biology of this material. Thus, this species complex and its relationship with the spontaneous species that are supposed to be its ancestors is being studied through intraspecific and interspecific hybridizations. This study is being conducted in the genetic laboratory of the National University of Côte d'Ivoire and is being financed by the EEC. The study started with samples left over from prospections carried out in Côte d'Ivoire by Hamon and Ahoussou (1988) with the assistance of the International Board for Plant Genetic Resources (IBPGR). We considered it important to our study to include, apart from Côte d'Ivoire, other countries lying within the yam belt, which covers the whole of West Africa from Liberia to Cameroon. Because of limited resources we were able to conduct the research in only two other countries - Benin and Cameroon.

Collecting period and itinerary

In Côte d'Ivoire, collecting was done at the end of the vegetative cycle, (22-26 October, 1990). At this time of year most of the plants are still leafy and it is not difficult to distinguish the various species when collecting tubers.

In Benin and Cameroon, early January (2-17 Jan 1991) was chosen because this period marks the end of the year cycle for the wild yam species. This enables sampling of mature tubers and fruits.

In all three countries visited, collecting sites were chosen in the forest and savannah zones as well as the forest-

savannah transition zones. In each country, national researchers were involved in the work. In Benin, 1000 km were covered with Norbert Maroya in the south and Romuald Dossou in the north; 3500 km were covered in Cameroon with Jean-Marie Fondoun and 1800 km in Côte d'Ivoire with Roland Dumont, Kouakou Amani and GbatoTokpa.

Samples collected

A total of 177 samples was collected (Table 1). In Benin a duplicate set was left at the Food Crop Research Centre in Ina and in Cameroon, a number of samples were returned to the Agronomy Research Institute in Yaoundé. What was collected - tubers, bulbs and fruits - depended on the species and what materials were available. Bulbs of *D. bulbifera* and *D. togoensis* were collected. Only the fruits of *D. preussii* were collected; it is very difficult to harvest the tuber of this species since it is long and thin.

The species often grow in colonies. This is true of *D. praehensilis*, which can be found in Bonafon, Cameroon, *D. burkilliana*, which grows in Fenda, southern Cameroon and *D. abyssinica*, which can be found in northern Benin, in Odiene, Côte d'Ivoire and the Ngaoundere and Mbé regions of Cameroon.

The uses of the species collected differ from country to country. For instance, *D. praehensilis* is eaten in Côte d'Ivoire while in Nkwen, Cameroon, between Bamenda and Bambovi, it is not consumed and is known as the yam of witches or of the devil, probably because of the thorns at the neck of the stem. However, the Bafia and Baboute peoples of Mbam in Cameroon eat it. Several tribes do not

Table 1. Geographical distribution of wild yam samples collected

Species	Number of samples collected			Total
	Benin	Cameroon	Côte d'Ivoire	
<i>D. abyssinica</i>	38	8	8	54
<i>D. burkilliana</i>	2	3	2	7
<i>D. praehensilis</i>	12	6	6	24
<i>D. mangelotiana</i>	—	2	2	4
<i>D. dumetorum</i>	41	12	3	56
<i>D. bulbifera</i>	8	7	1	16
<i>D. hirtiflora</i>	1	—	2	3
<i>D. togoensis</i>	1	—	3	4
<i>D. preussii</i>	1	2	1	4
<i>D. sansibarensis</i>	—	—	1	1
<i>D. minutiflora</i>	—	2	2	4
Total	104	42	31	177

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eat the wild *D. dumetorum*, while others reduce its bitterness and possibly poisonous content by boiling the tubers and leaving them in water for two or three days. This method is practised by the Baya tribe of Gbangambi (between Mangba and Mbankim) and the Dourou of Panoua in the Mbé region, Cameroon.

D. burkilliana, which is known to be poisonous, is not eaten in Fenda or Bakinguili, Cameroon, but it is consumed in other regions of the country. This pattern is repeated in Côte d'Ivoire, where it is eaten by the Bete.

Domestication and genetic erosion

The domestication of yams is still an issue in the countries visited. For instance, in Dribouo-Lebre, Côte d'Ivoire, farmers, realizing that *D. burkilliana* was becoming rare, began to plant samples so as not to 'lose it completely'. In Côte d'Ivoire, we had to travel about 10 km on foot before finding this species in its wild state. In the Pobé region of Benin, the two *D. burkilliana* samples collected had probably been planted. In the Bassila region (Benin), a farmer who decided to cultivate *D. abyssinica* has now done so for three consecutive years. Other villagers are about to follow suit. Inhabitants of Panoua in Cameroon look upon *D. abyssinica* as the 'grandfather' of cultivated yams.

Even if collecting wild yams is not a priority now (Hamon, 1987), more importance should be given to studying and evaluating them within the framework of the evaluation of African genetic resources. In some regions today, young people do not know that some wild yams are inedible. These wild yams serve as reservoirs of genes for the improvement of cultivated yams, and they should thus be given special attention. Formerly, the forest reserves, where all farming was forbidden, constituted natural reservoirs for these yams. With rising population, these forests are increasingly becoming 'declassified' and some species may become extinct.

Flowering and fructification

Most yams are dioecious. All the species harvested flower and have both male and female tubers. The females bear fruit. The rate of fructification varies according to the species and the region. Generally, the rate seems to be higher in wild yams than in the cultivated types. The most prolific species are *D. preussii*, *D. abyssinica*, *D. dumetorum* and, to a lesser extent, *D. praehensilis*. Fig. 1 shows the various types of fruit of these yams.

The seeds of wild yams vary according to the species. A membranous wing around the seed is a common characteristic of harvested yams. This wing appears in various forms. Fig. 2 shows the variability among seeds of the wild yams collected.

Several thousand fruits were harvested. Sowing of seeds will increase the number of some fruit-bearing species such as *D. abyssinica*, *D. dumetorum* and *D. praehensilis*.

Discussion and conclusion

Miège (1968) discovered *D. dumetorum* in southeast

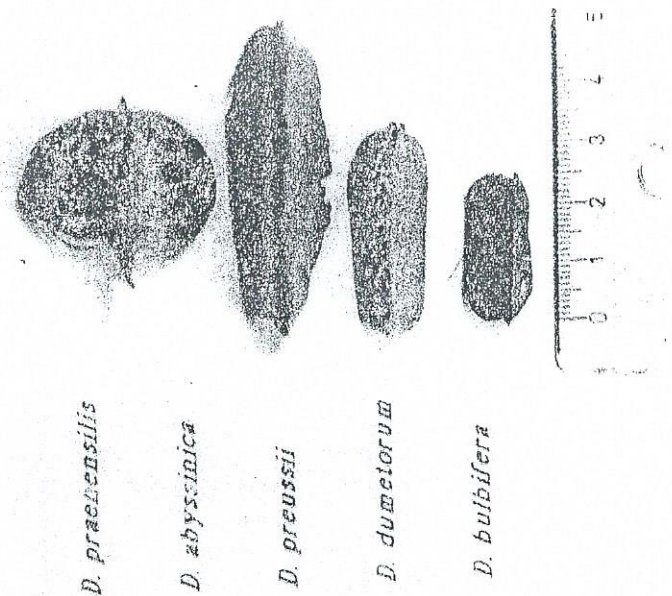


Fig. 1. Fruits of some wild yams. *D. praehensilis* and *D. abyssinica* both refer to the fruit on the left

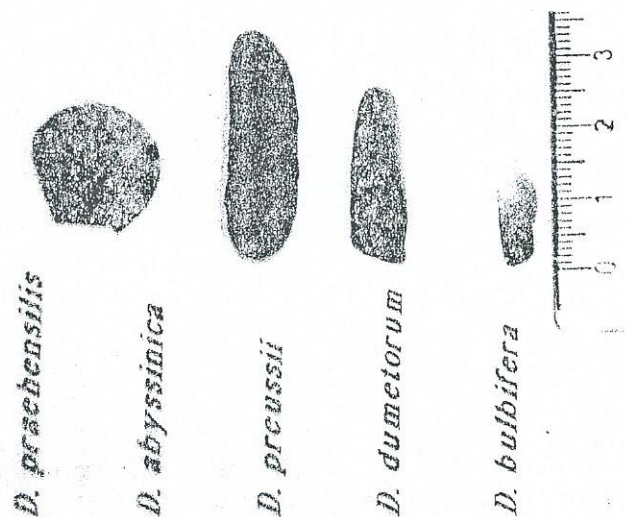


Fig. 2. Seeds of some wild yams. *D. praehensilis* and *D. abyssinica* both refer to the seed on the left

Cameroon. When collecting, we found this species everywhere we went - in the south, the west, in Adamaoua, in the central region and in the north.

Like Dumont *et al.* (in preparation), we believe that *D. praehensilis*, a mesophile forest species, can also be found in the forest zones of the savannah areas. This is true of northern Benin. The species is abundant in Cameroon between Adamaoua and the tropical rainforest.

Miège (1968) did not report the presence of *D. burkilliana* in Cameroon, but Dumont *et al.* (in preparation) observed that it was rare in the zones they visited. Our work showed that the southern region of Cameroon is rich in this rare species. This observation agrees with that made by A. Hladik (addressed to Dumont), who believes that the southern sector of Cameroon is an extension of the Gabonese and Congolese forest zones where this species can be found (Hladik *et al.*, 1984). Unlike Dumont *et al.* (in preparation), we did not observe that *D. bulbifera* was particu-

larly abundant in Cameroon. In our opinion, *D. dumetorum* is the most widespread *Dioscorea* species here; but we agree with these authors that *D. preussii* is rare in the north of Adamaoua while its presence is becoming fairly constant between the mountainous area and the tropical rainforest.

Aké (1984) described *D. abyssinica* as a rainforest and savannah species. While we were collecting in Côte d'Ivoire, Benin and Cameroon, this species was found exclusively in savannah areas.

According to Hamon (1987), the species that are currently involved in the domestication process, with supply difficulties, as understood by Harlan (1972), are *D. praehensilis* and *D. mangelotiana*, between Côte d'Ivoire and Nigeria. His work shows that *D. burkilliana* and *D. abyssinica* should be added to the list.

The morphological, enzymatic, cytological and even molecular study of samples of several different species will enable us to understand better the evolution of the *D. cayenensis-rotundata* species complex.

Acknowledgements

We wish to thank Dr Bidossessi E. Assan, Director of the Department of Agronomical Research in Benin and Dr Ayuk-Takem, Director of the Institute of Agronomical Research in Cameroon for their logistical support. I am grateful to Roland Dumont of Idessa, Côte d'Ivoire and Perla Hamon of Paul Valéry University, Montpellier, for providing me with information about wild African yams. I

thank my colleagues, N'Goran Ahoussou, Fanja Mondeil, Abdourahamane Sangaré and Laurent Grivet for our many discussions.

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